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| APPLICATION NO.                    | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/648,052                         | 08/26/2003  | Ruxandra Baurceanu   | ANL 273             | 2952             |
| 43006                              | 7590        | 09/16/2005           | EXAMINER            |                  |
| JAMES J. HILL                      |             |                      | COOKE, COLLEEN P    |                  |
| EMRICH & DITHMAR, LLC              |             |                      | ART UNIT            | PAPER NUMBER     |
| 125 SOUTH WACKER DRIVE, SUITE 2080 |             |                      |                     | 1754             |
| CHICAGO, IL 60606-4401             |             |                      |                     |                  |

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/648,052             | BAURCEANU ET AL.    |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Colleen P. Cooke       | 1754                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 09 August 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-20 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 8/22/05.
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date 9/6/05.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

***Response to Arguments***

Applicant's arguments filed 8/9/05 have been fully considered but they are not persuasive.

First, with respect to the rejection of claim 16 under 35 U.S.C. 112, second paragraph, the applicant argues that there is nothing to prevent more than one different family of superconductor being included on the same substrate or in the same construction in side-by-side relationship. The examiner's position, however, is that the claim is directed to and contains only reference to a (single) Cu-containing superconductor. It is unclear whether claim 16 is meant to further require additional superconductor layers which are of different families as no mention of other layers or other superconductors is made. As claim 16, dependent from claim 15, seems to contain reference to only the single superconductor, the limitation wherein the (single) superconductor is a member of one *or more* families is unclear. This confusion is further compounded by the fact that claim 16 refers to the "composition of claim 15" (claim 15 being drawn to an article really, and not necessarily to a composition per se) and therefore further compounds the confusion by seeming to indicate that the composition is a member of one or more families. Language to clarify that there are several superconductors, several superconducting layers, etc. to refer most closely to whatever applicant is intending by this limitation would help to overcome this rejection.

With respect to the rejection of claims 1-4, 6-8, 10-12, and 14-20 over Onabe et al. (US 2003/0134749), the applicant solely argues that the atom percent of the Onabe et al. publication translates to 0.75 atom percent to 4.5 atom percent copper, and therefore does not meet the claimed range of about 0.1 to about 0.3 atom percent. The examiner respectfully disagrees for at

least two reasons. First, the applicant's calculations, as provided separate from the response (see the Interview Summary of 9/6/05 where applicant kindly faxed a copy of the calculations to the examiner) appear to be incorrect. Second, the examiner's calculations, as detailed below, show that the teachings of Onabe et al. do indeed meet the claimed range of about 0.1 to about 0.3 atom percent copper. The applicant makes reference to In re Boesch et al. and states that no overlapping ranges exist in the present case; the applicant also argues that the examiner is attempting to modify the Onabe et al. reference in contradistinction to the fundamental teaching thereof. These arguments are based on the applicant calculations and therefore are not persuasive, as the examiner does not agree with the applicant's calculations. The calculations as made by the examiner below would appear to indicate that there are in fact overlapping ranges.

The applicant's calculations are based on a substrate size of 10 mm x 10 mm x 0.5 mm (page 1, line 8 of the calculations). These dimensions appear to be taken directly from Table 1 (see Column 3) of Onabe et al. However, the data in this table is used by Onabe et al. not to define the invention of Onabe et al. but rather in reference to a test performed by Onabe et al. to investigate the problem in the prior art of being unable to obtain a high Jc value (see Column 2, line 55 through Column 3, line 39). Onabe et al. details performing this test which leads to the conclusion that in the prior art, the superconducting characteristics deteriorate due to copper diffusion into the Ag base material from the oxide superconductor layer; this is the problem Onabe et al. proposes to solve by the invention described therein. Therefore these dimensions from Table 1, do not refer to the invention of Onabe et al. but rather to the prior art and therefore it would be incorrect to rely on prior art data to calculate the atom percentages taught as the invention of Onabe et al.

The applicant's calculations also rely upon the assumption that the 0.5 mm substrate is divided into 500 layers of 1 cm<sup>2</sup> area – an assumption the applicant states will be used throughout the calculations – each having 50 µg of copper. The problem with this assumption is that there is no grounding or basis for it anywhere in the teachings of Onabe et al. and further that arbitrarily picking a concrete number of layers into which the thickness of the substrate is divided does not provide any concrete calculation. It appears the applicant is attempting to divide the substrate into a finite number of layers (i.e. 500) to approximate the mathematically appropriate calculation of instead dividing the substrate into an infinite number of layers (i.e. taking the integral). This assumption not only incorporates the thickness dimension (0.5 mm) of the prior art, which is incorrect as described above, but also mathematically fails to accurately calculate the teachings of the reference by instead taking an arbitrary approximation.

Thus, for at least the two reasons described above the applicant's calculations appear flawed and incorrect.

The examiner's calculations have been carefully prepared and take a different approach from that of the applicant. The examiner has turned to a specific example (Embodiment 1 found in Columns 29-30) of the invention in Onabe et al. to provide data which can be used to calculate the atom percent of copper. Because these calculations rely upon data that is drawn solely to the invention (and not to the prior art as in Table 1) and do not rely upon any unsupported assumptions or approximations based on arbitrarily chosen parameters, the calculations represent a clear, concise, and concrete atom percent directly from the teachings of Onabe et al.

The calculations that follow draw from Embodiment 1 the dimensions of the base material (10mm(W) X 50mm(L) X 0.3mm(t)) and the teaching that analysis of the Cu content of

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the surface layer of the base material on which the diffusion layer was formed yielded a Cu content of 100-200  $\mu\text{g}$  per  $\text{cm}^2$ , which satisfies the requirements of the invention of Onabe et al. (see particularly Column 30, lines 5-8). The base material Onabe et al. uses and is referring to is an Ag single crystal base. The following calculations use this data to determine the atom percent of copper in this given embodiment. The calculations give two results, one based on the Ag single crystal base being 100% theoretically pure, and the other based on the Ag single crystal base having some level of impurities.

Furthermore, the calculations below also provide two additional results which are intended to show that the upper limit of the total disclosed range of copper as taught by Onabe et al., of 50-300  $\mu\text{g}/\text{cm}^2$  would also appear to meet the claimed range of about 0.1 to about 0.3 atom percent copper. These further calculations, based on Embodiment 1, are provided in light of the fact that Embodiment 1 was analyzed to have 100-200  $\mu\text{g}/\text{cm}^2$  of copper, which does not extend to the upper limit of 300  $\mu\text{g}/\text{cm}^2$  copper as taught, and are also calculated for both a theoretically 100% pure Ag base material and an Ag base material having some level of impurity.

Thus the calculations below provide four results (0.1078 atom % Cu, 0.1112 atom % Cu, 0.1616 atom % Cu, and 0.1649 atom % Cu), any one of which meets the claimed atom percent copper range of "between about 0.1 and about 0.3 atom percent Cu" as stated in both of independent claims 1 and 15. Therefore it would appear that claims 1-4, 6-8, 10-12, and 14-20 are anticipated by or, in the alternative, obvious over the teachings of Onabe et al. because as the calculations below demonstrate, Onabe et al. meets or overlaps the claimed atom percent copper and the applicant has argued with respect to these claims only that Onabe et al. does not meet the claimed atom percent copper.

**Calculation of atom percent Copper (Cu) based on Onabe et al. (US 6743531)**

The following is the examiner's calculations to determine an atom percent of copper (Cu) based on the teachings found particularly in Embodiment 1 of Onabe et al. (which is found in Column 29, line 20 through Column 30, line 60).

Information Given From Embodiment 1:

Base (Ag) Volume (Col. 29, l. 26-27) =  $10\text{mm(W)} \times 50\text{mm(L)} \times 0.3\text{mm(t)} = 150 \text{ mm}^3 = 0.150 \text{ cm}^3$

Cu content of diffusion layer on surface of base (Col. 30, l. 5-7) = 100 to 200  $\mu\text{g/cm}^2$

Surface Area of the Base =  $10\text{mm(W)} \times 50\text{mm(L)} = 500 \text{ mm}^2 = 5 \text{ cm}^2$

I. First, calculate the mass of Cu given there is up to 200  $\mu\text{g/cm}^2$  on the 5  $\text{cm}^2$  base:

$$\begin{array}{r|c} 200 \mu\text{g} & 5 \text{ cm}^2 \\ \hline & \text{cm}^2 \end{array} = 1000 \mu\text{g Cu}$$

II. Next, calculate the mass of Ag in the base. There are two possible options by which to calculate the mass of Ag in the base. The first calculation is for a (theoretically) pure Ag base. The second is for a base material having the impurity levels as shown in the base material of Table 1 (Column 3) which show the presence of some Ba and Cu as impurities. The applicant presumably uses base material from the same supplier and would therefore have the same impurities throughout.

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1. For a (theoretically) pure Ag base material use the base volume given of  $0.150 \text{ cm}^3$  and the density of Ag which is  $10.49 \text{ g/cm}^3$ :

$$\begin{array}{c|c} 10.49 \text{ g} & 0.150 \text{ cm}^3 \\ \hline & \text{cm}^3 \end{array} = 1.5735 \text{ g Ag} = 1.5735 * 10^6 \mu\text{g Ag}$$

2. For a base material having the Ag and impurity masses as in Table 1 for a  $10\text{mm}(W) \times 10\text{mm}(L) \times 0.5\text{mm}(t)$  sample:

Given the following information excerpted from Table 1:

|               | Ag (g) | Ba ( $\mu\text{g}$ ) | Cu ( $\mu\text{g}$ ) |
|---------------|--------|----------------------|----------------------|
| base material | 0.525  | 1.6                  | 11                   |

$$\text{Base Volume} = 10\text{mm}(W) \times 10\text{mm}(L) \times 0.5\text{mm}(t) = 50 \text{ mm}^3 = 0.05 \text{ cm}^3$$

Calculate by volume ratio the corresponding masses of Ag and impurities for the  $0.150 \text{ cm}^3$  sample of Embodiment 1:

$$\text{Ag: } \begin{array}{c|c} 0.525 \text{ g} & a \text{ g} \\ \hline 0.05 \text{ cm}^3 & 0.150 \text{ cm}^3 \end{array} \quad a = \frac{0.525 \text{ g} * 0.150 \text{ cm}^3}{0.05 \text{ cm}^3} = 1.575 \text{ g Ag} = 1.575 * 10^6 \mu\text{g Ag}$$

$$\text{Ba: } \begin{array}{c|c} 1.6 \mu\text{g} & b \text{ g} \\ \hline 0.05 \text{ cm}^3 & 0.150 \text{ cm}^3 \end{array} \quad b = \frac{1.6 \mu\text{g} * 0.150 \text{ cm}^3}{0.05 \text{ cm}^3} = 4.8 \mu\text{g Ba}$$

$$\text{Cu: } \begin{array}{c|c} 11 \mu\text{g} & c \text{ g} \\ \hline 0.05 \text{ cm}^3 & 0.150 \text{ cm}^3 \end{array} \quad c = \frac{11 \mu\text{g} * 0.150 \text{ cm}^3}{0.05 \text{ cm}^3} = 33 \mu\text{g Cu}$$

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III. Last, calculate the atom percent of Cu given the above masses, for both the first instance of (theoretically) pure Ag and the second instance of a base material having the impurities as given in Table 1, and also using the following atomic weights:

$$\text{Cu} = 63.546 \text{ g per mole of Cu atoms}$$

$$\text{Ag} = 107.8682 \text{ g per mole of Ag atoms}$$

$$\text{Ba} = 137.327 \text{ g per mole of Ba atoms}$$

Note - The units of these atomic weights will be abbreviated to "g per mole" due to space constraints, yet the abbreviation does not affect the calculations and the units cancel out in the end anyway..

1. For the (theoretically) pure Ag base [as calculated in II(1) above]:

$$\begin{aligned} \text{atom \% Cu} &= \frac{1000 \mu\text{g} / 63.546 \text{ g per mole}}{(1000 \mu\text{g} / 63.546 \text{ g per mole}) + (1.5735 \times 10^6 \mu\text{g} / 107.8682 \text{ g per mole})} \times 100\% \\ &= \frac{15.7366 \mu\text{g} / \text{g per mole}}{(15.7366 \mu\text{g} / \text{g per mole}) + (14587.2463 \mu\text{g} / \text{g per mole})} \times 100\% \\ &= 0.001078 \times 100\% = \underline{\text{0.1078 atom \% Cu}} \end{aligned}$$

2. For the base material having the impurities as in Table 1 [as calculated in II(2) above]:

$$\begin{aligned} \text{atom \% Cu} &= \frac{(1000 \mu\text{g} + 33 \mu\text{g}) / 63.546 \text{ g per mole}}{(1033 \mu\text{g} / 63.546 \text{ g per mole}) + (1.5735 \times 10^6 \mu\text{g} / 107.8682 \text{ g per mole}) + (4.8 \mu\text{g} / 137.327 \text{ g per mole})} \times 100\% \\ &= \frac{16.2560 \mu\text{g} / \text{g per mole}}{(16.2560 \mu\text{g} / \text{g per mole}) + (14601.1521 \mu\text{g} / \text{g per mole}) + (0.350 \mu\text{g/g per mole})} \times 100\% \end{aligned}$$

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$$= 0.001112 \times 100\% = \underline{0.1112 \text{ atom \% Cu}}$$

Furthermore, the above example is based on a Cu content of 100-200  $\mu\text{g}/\text{cm}^2$  which does not even extend to the upper limit taught in Onabe et al. of 300  $\mu\text{g}/\text{cm}^2$  (see for example Column 14, lines 8-11 disclosing the complete range of 50-300  $\mu\text{g}/\text{cm}^2$  as taught throughout). Thus, for the purposes of further example, the upper limit amount of copper as disclosed by Onabe et al. of 300  $\mu\text{g}/\text{cm}^2$  as applied to the specific example given in Embodiment 1, hypothetically for the purposes of discussion, would yield, by calculating as above using 300  $\mu\text{g}/\text{cm}^2$  in place of 200  $\mu\text{g}/\text{cm}^2$ :

$$\text{Mass of Cu: } \frac{300 \mu\text{g}}{\text{cm}^2} \quad | \quad 5 \text{ cm}^2 = \underline{1500 \mu\text{g Cu}}$$

Which, when used in place of the 1000  $\mu\text{g}$  Cu in the calculations above, yields the following atomic percents of Cu:

1. For the (theoretically) pure Ag base [as calculated in II(1) above]:

$$\text{atom \% Cu} = \frac{1500 \mu\text{g} / 63.546 \text{ g per mole}}{(1500 \mu\text{g} / 63.546 \text{ g per mole}) + (1.5735 \times 10^6 \mu\text{g} / 107.8682 \text{ g per mole})} \times 100\%$$

$$= \frac{23.6049 \mu\text{g/g per mole}}{(23.6049 \mu\text{g/g per mole}) + (14587.2463 \mu\text{g/g per mole})} \times 100\%$$

$$= 0.001616 \times 100\% = \underline{0.1616 \text{ atom \% Cu}}$$

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2. For the base material having the impurities as in Table 1 [as calculated in II(2) above]:

$$\begin{aligned}
 \text{atom \% Cu} &= \frac{(1500 \mu\text{g} + 33 \mu\text{g}) / 63.546 \text{ g per mole}}{(1533 \mu\text{g}/63.546 \text{ g per mole}) + (1.5735 \times 10^6 \mu\text{g}/107.8682 \text{ g per mole}) + (4.8 \mu\text{g}/137.327 \text{ g per mole})} \times 100\% \\
 &= \frac{24.1243 \mu\text{g} / \text{g per mole}}{(24.1243 \mu\text{g} / \text{g per mole}) + (14601.1521 \mu\text{g} / \text{g per mole}) + (0.350 \mu\text{g/g per mole})} \times 100\% \\
 &= 0.001649 \times 100\% = \underline{\text{0.1649 atom \% Cu}}
 \end{aligned}$$

Therefore the examiner maintains her position that the teachings in Onabe et al. of a diffusion layer of Ag and 50-300  $\mu\text{g/cm}^2$  of Cu (see for example Column 14, lines 8-11 disclosing the complete range of 50-300  $\mu\text{g/cm}^2$  as taught throughout) meet the claimed range of "between about 0.1 and about 0.3 atom percent" of Cu, as per claims 1 and 15.

The applicant argues, with respect to the rejections of claims 5, 9, and 13, solely that the claimed atom percentages of copper are not met by the references. As demonstrated above, Onabe et al. does meet these percentages and therefore these arguments are also not persuasive.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16 is unclear as it recites that the Cu-containing superconductor is a member of “one or more” of different superconducting material families. It is unclear how a single superconductor could be a member of more than one of the families listed.

***Claim Rejections - 35 USC § 102/103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-8, 10-12, and 14-20 are rejected under 35 U.S.C. 102(a or e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Onabe et al. (US 2003/0134749).

Onabe et al. teaches (see Figure 1) a superconducting layer (b) formed on a Cu diffusion layer (c) which is Cu diffused into Ag to produce an Ag layer with a small amount of Cu and also an Ag stabilizer (a) and an additional base portion of Ag (38). Onabe et al. teaches that the superconducting material may be one of a few types, including YBCO, BSCCO, and TBCCO (page 7, paragraph 0080). The diffusion layer (c) inherently would serve as a substrate for YBCO deposition and also as a stabilizer layer itself. Onabe et al. further teaches that the amount of Cu in the diffusion layer is from 50  $\mu\text{g}/\text{cm}^2$  to 300  $\mu\text{g}/\text{cm}^2$  (page 3, paragraph 0027).

If the teachings of Onabe et al. do not meet or encompass the claimed percent, it would be obvious to one of ordinary skill in the art at the time the invention was made to choose a percent in the applicant's claimed range, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. *In re Boesch*, 617 F.2<sup>nd</sup> 272, 205 USPQ 215 (CCPA 1980). The artisan would have been motivated to choose a percent Cu by the reasoned explanation that as Onabe et al. teaches, too much Cu may result in the undesirable formation of CuO and other oxides, while too little Cu is not sufficient to suppress the Cu migration from the oxide superconducting layer which may result in deterioration of the superconducting characteristics (page 3, paragraph 0027; for more teachings related to Cu migration and its negative effects, see the teachings on page 2 in paragraphs 0014, 0016, and 0019).

With respect to claim 20, it appears that the instantly claimed product by process is the same as that which is claimed (a Cu-containing superconducting layer directly in contact with a Ag layer containing Cu). When the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is

patentably distinct and not the examiner to show the same process as making. *In re Brown*. 173 USPQ 685 and *In re Fessman*, 180 USPQ 324.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onabe et al. (US 2003/0134749) as applied to claim 1 above, and further in view of Balachandran et al. (6579360).

Onabe et al. teaches the layered superconductor as described with respect to claim 1 above. Onabe et al. teaches that several different Cu-containing superconductors may be used, including YBCO, BSCCO, TBCCO (page 7, paragraph 0080). Onabe et al. does not specifically teach that an Hg-based superconductor, such as HBSCCO, may be used.

Balachandran et al. teaches a layered superconductor where the superconducting material may be from the YBCO family, BSCCO family, TBSCCO family, or HBSCCO family (Column 4, lines 20-32). It would have been obvious to modify the superconducting material by using another material such as HBSCCO because this material is demonstrated in the art to be similarly used.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onabe et al. (US 2003/0134749) as applied to claim 1 above, and further in view of Hahakura et al. (5929000).

Onabe et al. teaches the layered superconductor as described with respect to claim 1 above. Onabe et al. teaches a superconducting tape, and therefore does not teach a wire where the Ag layer takes the form of a sheath.

Hahakura et al. teaches a superconducting wire wherein BSCCO superconducting filaments (1) are in a stabilizing matrix (3) in the form of a sheath which is made of Ag or an Ag alloy (Column 6, lines 40-41).

It would have been obvious to modify the teachings of Onabe et al. by using the Ag material into which Cu is diffused as a sheath in contact with the Cu-containing superconductor instead of a flat layer or substrate because as Onabe et al. teaches, the diffused Cu is to deter or prevent the migration of Cu from the superconductor which would be equally a problem in either physical form and further because as Hahakura et al. teaches, these materials are known to be used in this form.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onabe et al. (US 2003/0134749) as applied to claim 1 above.

Onabe et al. teaches the layered superconductor as described with respect to claim 1 above (see Figure 1). Onabe et al. teaches that an Ag layer into which Cu is diffused is used only below the superconducting layer (i.e. on one side, as layer c) and not as the material for the stabilizer layer (a). Although Onabe et al. teaches that the stabilizer layer (a), which is directly above the superconducting layer, is made of Ag, it would have been obvious to make the stabilizer layer (a) out of the same Ag into which Cu is diffused (as in c) because as Onabe et al. teaches, Cu from the superconductor material will diffuse into an Ag layer which may result in deterioration of the superconducting characteristics (see page 2, paragraphs 0014, 0016, and 0019). This Cu migration from the superconductor into Ag will occur with any Ag in contact with the superconductor, regardless of which side of the superconductor the Ag contacts (i.e.

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whether the Ag is above or below the superconductor). Thus, as it would be obvious that Cu would migrate from the superconductor into the stabilizer layer (a), it would then be obvious to add enough Cu to the stabilizer layer to reduce or prevent the Cu from migrating (see also page 3, paragraph 0027).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colleen P Cooke whose telephone number is 571-272-1170. She can normally be reached Mon.-Thurs. 8am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, her supervisor, Stan Silverman can be reached at 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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